

WHAT MEASURES ENSURE SAFE TRANSPORTATION OF HIGH-LEVEL NUCLEAR WASTE?

Purpose:

This lesson gives students a more in-depth look at the transportation of high-level nuclear waste.

Concepts:

1. The safe and permanent disposal of high-level nuclear waste is a complicated process involving many steps.
2. Every aspect of transporting high-level nuclear waste is regulated.

Duration of Lesson:

One 50-minute class period

Objectives:

As a result of participation in this lesson, the learner will be able to:

1. discuss the measures that ensure the safe transportation of high-level nuclear waste.

Skills:

Discussing, reading, synthesizing

Vocabulary:

Cask, containment, engulfed, full-scale, simulated

Materials:

Reading Lesson

What Measures Ensure Safe Transportation of High-Level Nuclear Waste?, p. SR-1

Activity Sheets

What Measures Ensure Safe Transportation of High-Level Nuclear Waste?, p. 141

Transparencies

Where is Radioactive Material Shipped?, p. 127

Standards for Spent Fuel Casks, p. 129

Factors Considered in Selecting Highway Routes, p. 131

Information Provided to States and Indian Tribes about Shipments of Radioactive Materials, p. 133

U.S. Department of Energy Regional Coordinating Offices Emergency Operations Centers, p. 135

Videotape

Engineered for Safety (26 minutes) (available free of charge from the OCRWM National Information Center, 1-800-225-6972; within Washington, DC, 202-488-6720)

Suggested Procedure:

1. The reading assignment entitled *What Measures Ensure Safe Transportation of High-Level Nuclear Waste?* can be read individually. Discuss the reading and have students complete the reading review entitled *What Measures Ensure Safe Transportation of High-Level Nuclear Waste?*
2. Transparency masters may be helpful for introducing or reviewing the reading lesson.
3. As a followup, you may wish to watch and discuss the videotape *Engineered for Safety*, a 26-minute videotape that describes steps involved in safely transporting the Nation's spent fuel and high-level radioactive wastes. Cask design and testing procedures are reviewed.

Sample Videotape Questions - *Engineered for Safety*

- a) How does the energy produced from one fuel pellet compare with the energy produced from an equal amount of coal or oil?
 - b) Compare the radioactivity of fresh and spent fuel.
 - c) What do we currently do with spent fuel in the United States?
 - d) By what means do we transport spent fuel in the United States?
 - e) Describe the designing and testing process for transportation casks.
4. Have students write a few sentences synthesizing the various aspects of the waste management system and the importance of transportation in this system.

Teacher Evaluation of Learner Performance:

Discussion participation and response to reading review worksheet will indicate level of student comprehension.

Enrichment:

Designing for Safety, p. 19

Analyzing State Highway Maps, p. 171

Planning Hazardous Materials Shipment Routes, p. 175